REMARKS

Claims 1-33 are currently pending in the subject application, and are presently under consideration. Claim 12 has been amended to correct a typographical error, such that no further searching would be necessitated by this amendment. Favorable reconsideration of the application is requested in view of the amendments and comments herein.

I. Rejection of Claims 1-33 under 35 U.S.C. 102(b)

Claims 1-33 have been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,054,894 to Wright, et al. ("Wright"). Applicant traverses this rejection for the following reasons.

Wright does not anticipate claim 1. In sharp contrast to claim 1, Wright fails to disclose a power detector that provides an indication of power associated with a transmitter output signal. Instead, Wright discloses that a small sample ($\Gamma s(t)$) of an output signal ($ks(t)$) is coupled to an RF down conversion block 26 (See Wright, Col. 8, Lines 50-52). The small sample ($\Gamma s(t)$) is down converted to a complex baseband signal ($\gamma s(t)$) by RF down conversion block 26 and analog to digital (ADC) conversion block 27 (See Wright, Col. 8, Lines 53-55). An adaptive control processing and compensation estimator (ACPCE) block 28 compares three signals ($\gamma s(t)$, $Ph_A(t)$ and $Ph_B(t)$) and determines a remaining level of imperfection in an analog up conversion process that has not been previously corrected (See Wright, Col. 8, Lines 59-62). Significantly, the signals $Ph_A(t)$ and $Ph_B(t)$ correspond to phase-varying complex baseband signals that have been decomposed from the complex input baseband signal s(t) by a signal separator 11 (See Wright, Col. 7,lines 8-15). The signals $Ph_A(t)$ and $Ph_B(t)$ - like the signal s(t) - are digital data signals that are intended to amplified (See Wright, Col. 7, lines 1-3).

Therefore, in contrast to claim 1, neither the RF down conversion block 26 nor ADC block 27 disclosed in Wright provides an indication of power associated with a transmitter output signal. Instead, in Wright, RF down conversion block 26 and ADC conversion block 27 (operating together) convert a sample of output signal ks(t), namely $\Gamma s(t)$ to a complex baseband signal $\gamma s(t)$. Wright simply does not disclose that the complex baseband signal $\gamma s(t)$ is an indication of power associated with output signal ks(t). This distinction between the teachings of Wright and what is recited in claim 1 are even more evident with reference to FIGS. 13, 26 and

28, and their corresponding description, which describe the feedback path and reverse data flow in greater detail. Thus, nothing in Wright discloses that an indication of power associated with a transmitter output signal is provided by a power detector as recited in claim 1.

The Office Action further appears to misconstrue the waste recover system of FIG. 29 of Wright in rejecting claim 1. In particular, the Office Action cites Col. 44, line 57, to Col. 45, line 13 of Wright as part of its rejection of claim 1. However, nothing in the cited section of Wright, or elsewhere in Wright, exists any teaching that a power detector provides an indication of power associated with a transmitter output signal, as recited in claim 1. For instance, FIG. 29 illustrates a scheme which could be used to recover waste energy in place of dummy load that is coupled to a quadrature coupler. The waste power is not the power of the transmitter output signal, but instead corresponds to waste energy (See Wright, Col. 37, lines 14-22; Col. 44, lines 26-38). Significantly, Wright fails to teach or suggest any basis conclude using the recovered waste power to implement compensation, as recited in claim 1, but instead suggests only that the recovered power could be used to charge a large reservoir capacitor at the input to power supplies (Wright, Col. 44, lines 33-36).

Moreover, since Wright fails to disclose the power detector recited in claim 1, Wright cannot disclose a compensation system that employs an indication of power (provided by the power detector) to compensate for at least one transmitter impairment affecting the transmitting output signal. In contrast, as stated above, Wright discloses that the ACPCE block 28 compares three signals ($\gamma s(t)$, $Ph_A(t)$ and $Ph_B(t)$) and determines a remaining level of imperfection in an analog up conversion process that has not been previously corrected. Since none of the signals $\gamma s(t)$, $Ph_A(t)$ and $Ph_B(t)$ that ACPCE 28 compares correspond to an indication of power, there is no basis to conclude that compensation in Wright would be performed by employing an indication of power, as recited in claim 1.

For the reasons stated above, Wright does not disclose each and every element of claim 1. Therefore, Wright does not anticipate claim 1, and claim 1, as well as claims 2-13 depending therefrom, are patentable.

Additionally, regarding claim 3, Wright fails to teach (or even suggest) that a power detector provides the indication of power as a relative power measurement associated with the respective I and Q signal components. As discussed above, the feedback loop 32 taught by

Wright provides the downconverted, complex baseband signal $\gamma s(t)$, which data is compared to ideal (intended-to-be-amplified) baseband signals $Ph_A(t)$ and $Ph_B(t)$ by the ACPCE 28 to determine imperfections in the analog up-conversion process (Wright, Col. 8, lines 57-67). Since Wright fails to teach (or even suggest) that relative I and Q power measurements are employed to compensate for at least one transmitter impairment, as recited in claim 3 (which depends from claims 1 and 2), claim 3 is also patentable.

Additionally, regarding claim 7, Wright does not disclose a comparator that compares a power characteristic associated with each of the (plurality of) tones in a signal spectrum relative to a power characteristic of the reference tone to provide an indication of relative power for each respective tone, as recited in claim 7. For instance, Wright discloses that the ACPCE 28 includes a comparator 145 that compares the output of a linear non-linear component (LINC) amplifier 20, namely $ks_{oberserved}(t)$, with predicted waveform $ks_{predicited}(t)$ from model LINC amplifier 143 to provide the difference signal $V_{error}(t)$, which is used to adjust the model (See Wright, Col. 25, Lines 58-63 and FIG. 14). Wright does not disclose that $ks_{oberserved}(t)$ or $ks_{predicited}(t)$ are power characteristics. Instead, Wright specifically teaches that $ks_{oberserved}(t)$ and $ks_{predicited}(t)$ are observed and predicted waveforms, respectively. Compensation parameters are computed according to the estimator 147 adjusts the model based on the $V_{error}(t)$, from which compensation parameters are computed (Wright, Col. 25, lines 60-67). Thus, Wright does not disclose the comparator recited in claim 7 in which an indication of relative power is provided for each respective tone. Consequently, there is likewise no teaching (implicitly or explicitly) in Wright that a weighting function employs the relative indication of power for each tone to adjust the level of each tone relative to the reference tone, as recited in claim 7. Instead, the cited sections of Wright (Col. 32, line 53, to Col. 33, line 27) suggest performing a long-term averaging of parameter estimates so that newly calculated parameters do not change significantly or suddenly on each training calculation (See Wright, Col. 33, lines 6-17). Therefore, claim 7 as well as claim 8 depending from claim 7 are patentable.

Furthermore, regarding claim 9, Wright does not disclose a detector bias component, as recited in claim 9. As discussed with respect to claim1, Wright fails to teach the use of a power detector (claim 1), such that there would be no motivation or rationale to determine a DC bias associated with a power detector. Instead, Wright discloses that an adaptive control processing

and compensation estimator (ACPCE) 28 ensures that operation of a power amplifier is free from spurious emissions when required to switch on and off and also when ramping on and off transmissions (See Wright, Col. 15, Lines 27-30). However, claim 9 recites that the detector bias component is configured to determine a DC bias associated with operation of a power detector. The ACPCE 28 disclosed in Wright does not determine a DC bias associated with operation of a power detector, in contrast to the detector bias recited in claim 9. Instead, the ACPCE 28 disclosed in Wright compensates for spurious emissions related to transmissions by powering up the amplifiers gradually (Wright, Col. 15, lines31-34). There is nothing in Wright that discloses that such control would involve the use of detector bias component, as recited in claim 9. Since Wright does not disclose the detector bias component recited in claim 9, there is likewise no teaching that the ACPCE would employ the determined DC bias to mitigate effects of DC bias in the indication power, consistent with what is recited in claim 9. Therefore, Wright does not anticipate claim 9.

Claim 12 has been amended to correct a typographical error. In contrast to claim 12, which depends from claims 1 and 11, Wright does not disclose the mismatch correction system recited in claim 12. Similar to as stated above with respect to claims 3 and 7, Wright discloses ACPCE 28 includes a comparator 145 that compares the output of a LINC amplifier 20, namely $ks_{oberserved}(t)$ 18 with predicted waveform $ks_{predicited}(t)$ 144 from model LINC amplifier 143 to provide the difference signal $V_{error}(t)$ 146 (See Wright, Col. 25, Lines 58-63 and FIG. 14). The comparator 145 disclosed in Wright does not correspond to the comparator recited in claim 12, as appears is being suggested in the Office Action. The comparator of claim 12 compares an indication of power associated with an in-phase (I) signal component and an indication of power associated with a quadrature (Q) signal component to provide an indication of relative power characteristics corresponding to a mismatch associated with a signal path for the I-signal component and a signal path for the Q-signal component. In contrast, the comparator 145 disclosed in Wright does not compare nor provide indications of power. Consequently, Wright fails to teach a control that can adjust one or both of the I and Q signal components based on the indication of relative power characteristics, as recited in claim 12. Furthermore, since claim 12 depends from claims 11 and 1, both of the indications of power associated with the respective I and Q signal components that are compared in claim 11 are associated with a transmitter output

signal. In contrast, in Wright, one of the signals that is compared by the comparator 145, namely $ks_{predicited}(t)$ 144 is not even associated with the output signal ks(t) 18. Instead, $ks_{predicited}(t)$ is the output of a numerical model of a real analog LINC amplifier 20 (See Wright, Col. 25, Lines 52-54). For these reasons, as well as those stated in support of claims 3 and 7, Wright does not disclose the comparator recited in claim 12. Accordingly, Applicant respectfully requests allowance of claim 12.

Claim 14 is not anticipated by Wright. Wright does not disclose a correction system and a power detector, as recited in claim 14. For the reasons discussed above with respect to claim 1, Wright does not disclose a power detector that detects power associated with a transmit signal and provides an indication of power, as recited in claim 14. Instead, Wright discloses that RF down conversion block 26 and ADC block 27 provides a baseband complex signal γs(t) 137 that is a converted sample of output signal ks(t) 18. The signal γs(t) is not an indication of power, and thus, Wright does not disclose the power detector recited in claim 14. Moreover, since Wright fails to disclose the power detector recited in claim 14, Wright cannot disclose a correction system associated with a baseband system for adjusting at least one of an I and Q signal components based on the indication of power of the transmit signal (provided by the power detector), as recited in claim 14. For these reasons, Wright does not disclose each and every element of claim 14, and thus does not anticipate claim 14. Accordingly, claim 14, as well as claims 15-20 depending therefrom, are patentable and their allowance is respectfully requested.

Additionally, regarding claim 18, Wright does not disclose a correction system comprising a mismatch correction system operative to ascertain, based on an indication of power, an indication of mismatch associated with a signal path for an I-signal component and a signal path for a Q-signal component, as recited in claim 18. Similar to as discussed above with respect to claims 7 and 12, the comparator 145 disclosed in Wright does not compare indications of power. That is, there is no teaching in Wright to ascertain an indication of mismatch between I and Q signal components based on the indication of power (from claim 14). Accordingly, Wright does not anticipate claim 18.

Claim 21, which is written in means plus function format, is not anticipated by Wright. Similar to as discussed above with respect to claim 1, Wright fails to disclose determining an

indication of power associated with a transmit output signal, as recited in claim 21. Consequently, Wright also fails to disclose any means for compensating for distortion based on the indication of power, as recited in claim 21. Since Wright does not disclose each and every element of claim 21, Wright does not anticipate claim 21, and claim 21, as well as claims 22-27 depending therefrom. Reconsideration and allowance of these claims are respectfully requested.

Additionally, regarding claim 24, Wright does not disclose means for mitigating spikes, as recited in claim 24. In Wright, the ACPCE 28 ensures that operation of a power amplifier is free from spurious emissions when required to switch on and off and also when ramping on and off transmissions (See Wright, Col. 15, Lines 27-30). However, claim 24 recites that means for mitigating spikes does its function, applying a DC signal to adjust one or both I and Q signal components, based on the indication of power. In sharp contrast to claim 24, the operation of ACPCE 28 disclosed in Wright is not based on an indication of power, since as discussed repeatedly above, Wright fails to disclose an indication of power. Thus, Wright does not disclose anticipate claim 24.

Wright does not anticipate claim 28 for substantially the same reasons discussed above with respect to claim 1 and 24; namely, Wright fails to disclose detecting an indication of power associated with a transmit signal. Additionally, since Wright does not disclose detecting an indication of power, as recited in claim 28, Wright cannot disclose selectively adjusting at least one of an I-signal component and a Q-signal component based on the indication of power to compensate for impairments associated with a communications apparatus that affect the transmit signal, as recited in claim 28. Since, for these reasons and those discussed above with respect to claim 1, Wright does not disclose each and every element of claim 28, Wright does not anticipate claim 28. Applicant thus respectfully requests reconsideration and allowance of claim 28, as well as claims 29-33 depending therefrom.

Additionally, regarding claim 33, Wright does not disclose determining a weight factor for each of (a plurality of) tones based on an indication of power associated with each respective one of the tones relative to an indication of power associated with a reference one of the tones. As discussed above, Wright fails to disclose an indication of power. Accordingly, Wright cannot disclose determining a weight factor, as recited in claim 33.

For the reasons discussed above, claims 1-33 are not anticipated by the cited art. Accordingly, reconsideration and allowance of claims 1-33 is respectfully requested.

II. CONCLUSION

In view of the foregoing remarks, Applicant's representative respectfully submits that the present application is in condition for allowance. Applicant's representative respectfully requests reconsideration of this application and that the application be passed to issue.

Should the Examiner have any questions concerning this paper, the Examiner is invited and encouraged to contact Applicant's undersigned attorney at (216) 621-2234, Ext. 106.

No additional fees should be due for this response. In the event any fees are due in connection with the filing of this document, the Commissioner is authorized to charge those fees to Deposit Account No. 20-0668.

Respectfully submitted,

By: ______________________
Gary J. Pitzer
Registration No. 39,334
Attorney for Applicants

CUSTOMER NO.: 23494

TEXAS INSTRUMENTS INCORPORATED
P.O. Box 655474, M/S 3999
Dallas, TX 75265
(972) 917-5633